Remarks

The specification has been amended to add section titles thereto. In addition, claims 1-13 have been amended to further clarify the subject matter for which protection is sought and to eliminate multiple dependencies and reference numerals therefrom. None of the claims has been narrowed by this amendment. In addition to the foregoing, the abstract has been amended to eliminate reference numerals.

Attached hereto as pages 7-10 is a marked-up version of the changes made to the claims by the current amendment.

An early and favorable action on the merits is respectfully requested.

Respectfully submitted,

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Version with Markings to Show Changes Made

In the Abstract:

Please amend the abstract as follows:

Abstract of the Disclosure

METHOD FOR NAVIGATING IN THE INTERIOR OF THE BODY USING THREE-DIMENSIONALLY VISUALIZED STRUCTURES

A method is described for navigating in the interior of the body using three-dimensionally visualized structures. In a first step of the method, at least two two-dimensional images [(50, 50')] of the same anatomical object [(12)] are provided from different perspectives, and also items of information that make it possible to draw conclusions about the respective spatial position of an imaging system relative to the anatomical object [(12)]. The projections [(76, 76', 78, 78')] of a geometrical structure [(80, 82)] to be visualized are then created in every two-dimensional image [(50, 50')], wherein a geometrical structure [(80, 82)] to be visualized is created in each two-dimensional image [(50, 50')], wherein the geometrical structure [(80, 82)] to be visualized is different from the anatomical object [(12)]. A cone surface [(40, 40')] is then generated in space for each image [(50, 50')] wherein the spatial positions of the cone vertex [(46, 46')] and cone directrix are determined from the respective spatial position of the imaging system and the shape of the cone directrix is determined from the shape of the projection [(76, 76', 78, 78')] of the geometrical structure to be visualized [(80, 82)] on the image [(50, 50')]. Finally, a spatial intersection of the individual cone surfaces [(40, 40')] is formed to determine the geometrical structure [(80, 82)] and the geometrical structure [(80, 82)] determined and/or an intersection of a plurality of geometrical structures [(80, 82)] determined are/is represented and the representation is used for navigation.

[(Figure 9)]

In the Specification:

At page 1, line 4, insert the heading "Background of the Invention";

At page 2, line 23, insert the heading "Summary of the Invention";

At page 11, line 24; insert the heading "Brief Description of the Drawings";

At page 12, line 28 insert the heading "Description of the Preferred Embodiment".

At page 26, line 1, please delete "PATENT CLAIMS" and insert therefore "We Claim:"

In the Claims:

Claims 1-13 have been amended as follows:

1. (Amended) Method for navigating in the interior of the body using three-dimensionally visualized structures, comprising the following steps:

- providing at least two two-dimensional images [(50, 50')] of the same anatomical object [(12)] from different perspectives and also of information which makes it possible to draw a conclusion about the respective spatial position of an imaging system [(26)] relative to the anatomical object [(12)];
- defining a projection [(76, 76', 78, 78')] of a geometrical structure [(72, 80, 82)] to be visualized or a part thereof in each two-dimensional image, wherein the geometrical structure [(72, 80, 82)] to be visualized is different from the anatomical object [(12)];
- generating a conical surface [(40, 40')] in space for every image [(50, 50')], wherein the spatial positions of cone vertex [(46, 46')] and cone directrix are determined from the respective spatial position of the imaging system [(26)] and the shape of the cone directrix is determined from the shape of the projection [(76, 76', 78, 78')] of the geometrical structure [(72, 80, 82)] to be visualized;
- forming a spatial intersection of the individual conical surfaces [(40, 40')] to determine the geometrical structure [(72, 80, 82)]; and
- displaying the geometrical structure [(72, 80, 82)] determined and/or an intersection [(74)] of a plurality of geometrical structures [(72, 80, 82)] determined and using the representation for navigation.

2. (Amended) Method according to Claim 1, [characterized in that] wherein the created projection of the geometrical structure [(72, 80, 82)] is a point, a straight line [(76, 76')], a circular segment [(78, 78')] or another structure having the form of a line.

3. (Amended) Method according to Claim 1 [or 2, characterized in that], wherein the geometrical structure to be visualized is a point [(72)], a straight line [(82)], a plane, a sphere [(80)] or another two-dimensional or three-dimensional structure.

4. (Amended) Method according to Claim 1, [2 or 3, characterized in that] wherein the two-dimensional images [(50, 50')] are generated by X-ray methods and/or magnetoresonance methods.

5. (Amended) Method according to [one of Claims 1 to 4, characterized in that] Claim 1, wherein the spatial intersection is revised using at least one further data set of the anatomical object [(12)].

6. (Amended) Method according to Claim 5, [characterized in that] wherein a two-dimensional or three-dimensional image or a generic model of the anatomical object [(12)] is used as further data set.

7. (Amended) Method according to [one of Claims 1 to 6, characterized in that] Claim 1, wherein suitable perspectives are determined for further two-dimensional images by inverse calculations.

8. (Amended) Method according to [one of Claims 1 to 7, characterized in that, additionally] Claim 1 wherein, the spatial position of an instrument [(14)] to be navigated is shown graphically relative to the geometrical structure [(72, 80, 82)] or to the intersection [(74)].

9. (Amended) Method according to [one of Claims 1 to 8, characterized in that] Claim 1, wherein the effective axis [(60, 60', 60", 60"')] of the surgical instrument [(14)] is shown graphically.

10. (Amended) Method according to [one of Claims 1 to 9, characterized in that] Claim 1, wherein the individual two-dimensional images [(50, 50', 50", 50"')] are shown graphically taking account of the positions [(46, 46')] from which the images were taken.

11. (Amended) Method according to [one of Claims 1 to 10, characterized in that] Claim 1, wherein a navigation aid in the form of a tunnel structure [(92)] is shown graphically.

12. (Amended) Method according to Claim 11, [characterized in that] wherein, in addition to the navigation aid [(92)], a separate direction indicator [(96)] is shown graphically for the navigation of the surgical instrument [(14)].

13. (Amended) Method for navigating in the interior of the body using three-dimensionally visualized structures, comprising the following steps:

- providing at least two two-dimensional X-ray images [(50, 50')] of the same bone [(12)] from different perspectives, of information that makes it possible to draw conclusions about the respective spatial position of an X-ray imaging system [(26)] relative to the bone [(12)], and also a magnetoresonance data set of the bone [(12)];
- defining a projection [(76, 76', 78, 78')] of a surface or of an outline of the spongiosa of the bone [(12)] in every two-dimensional X-ray image;
- generating a conical surface [(40, 40')] in space for every image [(50, 50')], wherein the spatial positions of cone vertex [(46, 46')] and cone directrix are determined from the spatial position of the imaging system [(26)] and the shape of the cone directrix is determined from the shape of the defined projection;
- forming a spatial intersection of the individual cone surfaces [(40, 40')] to determine a first model of the spongiosa;
- determining a second model of the spongiosa from the magnetoresonance data set;
- generating a representation of the bone [(12)] by combining the two models and use of the representation for the purpose of navigation.